

Examining Science Education in ChatGPT: An Exploratory Study of Generative Artificial Intelligence

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Abstract

The advent of generative artificial intelligence (AI) offers transformative potential in the field of education. The study explores three main areas: (1) How did ChatGPT answer questions related to science education? (2) What are some ways educators could utilise ChatGPT in their science pedagogy? and (3) How has ChatGPT been utilised in this study, and what are my reflections about its use as a research tool? This exploratory research applies a self-study methodology to investigate the technology. Impressively, ChatGPT's output often aligned with key themes in the research. However, as it currently stands, ChatGPT runs the risk of positioning itself as the ultimate epistemic authority, where a single truth is assumed without a proper grounding in evidence or presented with sufficient qualifications. Key ethical concerns associated with AI include its potential environmental impact, issues related to content moderation, and the risk of copyright infringement. It is important for educators to model responsible use of ChatGPT, prioritise critical thinking, and be clear about expectations. ChatGPT is likely to be a useful tool for educators designing science units, rubrics, and quizzes. Educators should critically evaluate any AI-generated resource and adapt it to their specific teaching contexts. ChatGPT was used as a research tool for assistance with editing and to experiment with making the research narrative clearer. The intention of the paper is to act as a catalyst for a broader conversation about the use of generative AI in science education.